

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-448
Relating to Exemptions Under Section 27156
of the Vehicle Code

WYNJAMMER SUPERCHARGERS
SUPERCHARGER SYSTEM

Pursuant to the authority vested in the Air Resources Board by Section 27156 of the Vehicle Code; and

Pursuant to the authority vested in the undersigned by Section 39515 and Section 39516 of the Health and Safety Code and Executive Order G-45-9;

IT IS ORDERED AND RESOLVED: That the installation of the Wynjammer supercharger system, manufactured and marketed by Wynjammer Superchargers, Wynjammer Superchargers, 8321 E. Evans Road #101, Scottsdale, Arizona 85260 has been found not to reduce the effectiveness of the applicable vehicle pollution control system and, therefore, is exempt from the prohibitions of Section 27156 of the Vehicle Code for the following Ford 5.4L applications: 1997 model-year Expedition, Navigator, F-150, and F-250 (kit # 975.4).

The Wynjammer supercharger system includes the following main components: Wynjammer supercharger, replacement open-element air cleaner, and assorted brackets, tubing, hoses, fittings and hardware. The diameter of the drive pulley is 6.5 inches, and the supercharger pulley diameter is 2.6 inches.

This Executive Order is valid provided that the installation instructions for the supercharger will not recommend tuning the vehicle to specifications different from those of the vehicle manufacturer.

Changes made to the design or operating conditions of the supercharger system, as exempt by the Air Resources Board, which adversely affect the performance of the vehicle's pollution control system shall invalidate this Executive Order.

Marketing of the supercharger using any identification other than that shown in this Executive Order or marketing of the supercharger for an application other than those listed in this Executive Order shall be prohibited unless prior approval is obtained from the Air Resources Board. Exemption of the supercharger shall not be construed as exemption to sell, offer for sale, or advertise any component of the kit as an individual device.

This Executive Order does not constitute any opinion as to the effect the use of the supercharger may have on any warranty either expressed or implied by the vehicle manufacturer.

This Executive Order is granted based on emissions testing and examination of the On-Board Diagnostic II (OBD-II) system of the vehicle in the modified configuration. Results from emissions testing yielded emissions within the applicable standards with the original manufacturer's (Ford's) deterioration factors applied. The emissions results are shown below:

Raw Emission Level	NMHC 0.123	CO 1.009	NOx 0.188
50k DF Emission Level (w. DF applied) STD	NMHC 0.016 0.139	CO 0.316 1.3	NOx 0.100 0.3
100k DF Emission Level (w. DF applied) STD	NMHC 0.040 0.163	CO 0.797 1.8	NOx 0.252 0.44
		5.0	1.1
		7.3	1.53

Therefore, based on the test results, the staff concludes that the Wynjammer supercharger meets the criteria for exempting general criteria parts as specified in the "Procedures for Exemption of Add-On and Modified Parts". However, the ARB finds that reasonable grounds exist to believe that use of the Wynjammer supercharger may adversely affect emissions of motor vehicles when operating under conditions outside the parameters of the CVS-75 Federal Test Procedure. Accordingly, the ARB reserves the right to conduct additional emission tests, in the future, as such tests are developed, that will more adequately measure emissions from all cycle phases. If such test results demonstrate that the Wynjammer supercharger system adversely affects emissions during off-cycle conditions (defined as those conditions which are beyond the parameters of the Cold-Start CVS-75 Federal Test Procedure), this Executive Order shall be effectively rescinded as of the date the test results are validated. Further, if such test results or other evidence provides the ARB with reason to suspect that the supercharger will affect the durability of the emission control system, Wynjammer shall be required to submit durability data to show that the durability of the vehicle emission control system is not, in fact, affected and/or that the add-on or modified part demonstrates adequate durability.

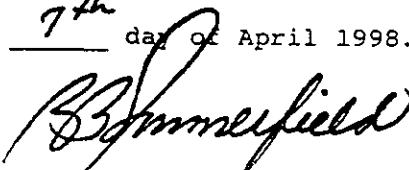
In addition to the foregoing, the ARB reserves the right in the future to review this Executive Order and the exemption provided herein to assure that the exempted add-on or modified part continues to meet the standards and procedures of Title 13, California Code of Regulations, Section 2222, et seq.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF ANY CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF WYNJAMMER SUPERCHARGERS' SUPERCHARGER KIT.

No claim of any kind, such as "Approved by the Air Resources Board", may be made with respect to the action taken herein in any advertising or other oral or written communication.

Violation of any of the above conditions shall be grounds for revocation of this order. The order may be revoked only after a ten-day written notice of intention to revoke the order, in which period the holder of the order may request in writing a hearing to contest the proposed revocation. If a hearing is requested, it shall be held within ten days of receipt of the request and the order may not be revoked until a determination after hearing that grounds for revocation exist.

Executed at El Monte, California, this 7th day of April 1998.


R. B. Summerfield, Chief
Mobile Source Operations Division

State of California
AIR RESOURCES BOARD

EVALUATION OF WYNJAMMER SUPERCHARGERS' SUPERCHARGER SYSTEM
FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE
SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE
CALIFORNIA CODE OF REGULATIONS

April 1998

by

Mobile Source Operations Division
Aftermarket Parts Section
9528 Telstar Avenue
El Monte, CA 91731

(This report has been reviewed by the staff of the California Air Resources Board and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.)

SUMMARY

Wynjammer Superchargers of, 8321 E. Evans Road #101, Scottsdale, Arizona 85260 has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for the Wynjammer supercharger system designed for the following Ford 5.4L applications: 1997 model-year Expedition, Navigator, F-150, and F-250 (kit # 975.4). The diameter of the drive pulley is 6.5 inches, and the supercharger pulley diameter is 2.6 inches.

Based on comparison of new vehicle certification standards with test results in the modified configuration (supercharger installed), the staff concludes that the Wynjammer supercharger system will not adversely affect exhaust emissions from vehicles for which the exemption is requested.

The staff recommends that Wynjammer Superchargers be granted an exemption as requested and that Executive Order D-448 be issued.

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CALIFORNIA CODE OF REGULATIONS

I. INTRODUCTION

Wynjammer Superchargers of 8321 E. Evans Road #101, Scottsdale, Arizona 85260 has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for the supercharger system designed for the following Ford 5.4L applications: 1997 model-year Expedition, Navigator, F-150, and F-250 (kit # 975.4).

II. CONCLUSIONS

Based on testing in the modified configuration, the staff concludes that Wynjammer Superchargers' supercharger will not adversely affect exhaust emissions from the vehicles for which the exemption is requested.

III. RECOMMENDATION

The staff recommends that Wynjammer Superchargers be granted an exemption for the Wynjammer supercharger system (kit # 975.4) for installation on those applicable 1997 model-year Ford vehicles. The staff also recommends that Executive Order D-448 be issued.

IV. SUPERCHARGER DESCRIPTION

The Wynjammer supercharger has been specifically designed for installation on the following 1997 model-year Ford vehicles equipped with 5.4L engines: Expedition, Navigator, F-150, and F-250 (kit # 975.4).

The system operates in conjunction with the original equipment manufacturer's (OEM) computer controlled fuel injection system and emission control system already certified with the stock engine.

The purpose of supercharging an engine is to increase its volumetric efficiency and power output at particular engine loads and throttle openings

through an increase intake air pressure. At heavy engine loads and increased throttle openings, the manifold pressure is increased by the supercharger allowing more air and fuel to enter the engine, resulting in a higher power output. The supercharger is driven by the crankshaft by means of a belt. The diameter of the drive pulley is 6.5 inches, and the supercharger pulley diameter is 2.9 inches.

The supercharger used for this kit is a Wynjammer belt driven centrifugal unit, designed to produce boost over a wide range of exhaust flowrates by maintaining high compressor speeds. Maximum boost pressures attained are 4 to 6.5 psi.

The installation of the supercharger kit does not require any major modifications to the stock Ford motor, except for the modification of the factory intake system, and crankshaft pulley to accommodate the supercharger drive pulley.

V. DISCUSSION OF THE SUPERCHARGER

A 1997 model-year Ford Expedition (Tier-1, MDV3, engine family VFM5.4G1FK) with a 5.4L engine was used for the evaluation of the supercharger. The dynamometer inertia weight and roadload horsepower settings were 6,500-lbs and 16.2-hp, respectively. Testing consisted of two CVS-75 FTP's in the modified configuration to verify proper operation of the OBD-II system. The emissions of the test vehicle were measured once in the modified configuration. The ARB did not perform testing to confirm the test results submitted by the applicant.

Results from emissions testing conducted at the Edelbrock Corporation Emissions Laboratory yielded emissions within the applicable standards with the original manufacturer's (Ford's) deterioration factors

applied. The emissions results are shown below:

Raw	NMHC	CO	NOx
Emission Level	0.123	1.009	0.188

50k	NMHC	CO	NOx
DF	0.016	0.316	0.100
Emission Level	0.139	1.3	0.3
(w. DF applied)			
STD	0.39	5.0	1.1

100k	NMHC	CO	NOx
DF	0.040	0.797	0.252
Emission Level	0.163	1.8	0.44
(w. DF applied)			
STD	0.56	7.3	1.53

Therefore, based on the test results, the staff concludes that the Wynjammer supercharger meets the criteria for exempting general criteria parts as specified in the "Procedures for Exemption of Add-On and Modified Parts".

However, the ARB finds that reasonable grounds exist to believe that use of the Wynjammer supercharger may adversely affect emissions of motor vehicles when operating under conditions outside the parameters of the previously prescribed test procedure.

Wynjammer Superchargers has submitted all the required information and fulfilled the requirements for an exemption.